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caoutchouc industry of Bahia, has described 3 new species of Manihot.—P. B. Kennedy (Muhlenbergia **4**:1–4. 1908) has described a new species of Dicoria from Nevada.—S. Sommier (Giorn. Bot. Ital. N. S. **14**:496–505. *pl. 14.* 1907) has described a new genus (*Melitella*) of Compositae (Cichoriaceae) from Malta.—R. Pampanini (*idem* 591–606), in describing a fascicle of new species, includes a Codonanthe from Brazil and a Sesbania from Central America (Mexico ?).—A. B. Rendle, E. G. Baker, and S. LeM. Moore (Jour. Linn. Soc. Bot. **38**:228–279. *pls. 16–19.* 1908), in an account of the Wollaston collection of plants from Mt. Ruwenzori (Africa), describe 34 new species, among which there is a new genus (*Choananthus*) of Amaryllidaceae.—A. D. E. Elmer (Leaflets Philipp. B **1**:212–219. 1907) has described 8 new species of Freycinetia from Lucban; also (*idem* 220–232) 11 new species of Leguminosae, including the new genus *Luzonia* (nearest Canavalia); and (*idem* 236–261) has presented 41 species and varieties of Ficus collected within a radius of three miles of Lucban (Luzon), including 6 new species.—E. B. Copeland (*idem* 233–235) has described 3 new species of ferns from the Philippines.—J. H. Barnhart (Bull. Torr. Bot. Club **34**:579–582. *pl. 34.* 1907) has described a new Utricularia from Long Isand.—J. C. Arthur (*idem* 583–592), in his sixth fascicle of new Uredineae, describes 15 new species.—K. K. Mackenzie (*idem* 603–607), has described 4 new species of Carex.—H. Rehm (Annales Mycol. **5**:516–546. 1907), in describing 95 new species of Ascomycetes from various parts of the world, includes 18 from North America and 38 from South America.—In publishing the third fascicle of Weberbauer's new plants from the Andes (Bot. Jahrb. **40**:225–395. 1908), 264 new species are described, including the following new genera: *Urbanodoxa* and *Englerocharis* (Cruciferae), by R. Muscher; *Urbanosciadium* (Umbelliferae), by H. Wolff; and *Acrobotrys* (Rubiaceae), by K. Schumann and K. Krause.—R. Pilger (*idem* 396, 397) has described a new genus (*Glischrothamnus*) of Aizoaceae from Brazil.—R. Schlechter (Bot. Jahrb. Beibl. **40**^{3}:1–19. 1908), in describing 36 new Asclepiadaceae from the East Indies, includes the new genera *Oistonema* and *Anatropanthus;* the same author (*idem* 20–45) describes 54 new species from New Caledonia, and includes four new genera (*Dolichanthera*, *Rhopalobrachium*, *Atractocarpus*, *Bonatia*) of Rubiaceae.—C. C. Hosseus (Bot. Jahrb. **41**:55–61. *pls. 1, 2.* 1908) has described a new genus (*Richthofenia*) of Rafflesiaceae from Siam; he has also published (*idem* 62–73) a list of 55 species of Acanthaceae from Siam, including 12 new species.—E. Koehne (*idem* 74–110) has supplemented his account of Lythraceae in Engler's *Pflanzenreich* (1903) by intercalating species published since that date, many of them American (chiefly Mexican), and by adding 16 new species published here for the first time.—N. L. Britton and J. N. Rose (Smithson. Misc. Coll. **50**:503–539. 1908) have published a preliminary account of the Opuntioideae of North America, recognizing 143 species of Opuntia (15 of which are new), 6 of Nopalea, and 11 of Pereskiopsis, a genus recently published in the same serial (331–333).—J. M. C.

The individuality of the chromosome.—By subjecting root tips of *Pisum sativum* to a 0.75 per cent. solution of chloral hydrate at 20° C. for one hour, then washing away the chloral hydrate in water and growing the tips in sawdust, NEMEC found that after 20 hours many cells have become binucleate. After 27 hours few cells are binucleate, but many contain large nuclei which contain 28 chromosomes, twice the $2x$ number. After 40 hours the mitoses show regularly 14 chromosomes, the $2x$ number. NEMEC believed the quadruple number to be brought back automatically to the $2x$ number by a heterotypic mitosis.

STRASBURGER[11] has traversed the same ground, treating material of *Pisum sativum* in the same way and making an exhaustive study of all the cytological phenomena. He found cells with two nuclei and observed that such nuclei fuse to form large nuclei with 28 chromosomes, the quadruple number; but such mitoses, aside from the large number of chromosomes, present no striking peculiarities. There are abnormalities, due to the chloralization, but there are no characteristics of the heterotypic mitosis or anything else to indicate a reduction to the $2x$ number; but rather there is evidence that the $4x$ number, once established, persists.

The investigation of chloralized nuclei was made particularly exhaustive, that it might form a basis for comparison with nuclear phenomena in graft hybrids. An investigation of typical and chloralized nuclei of *Laburnum vulgare*, *Cytisus purpureus*, and *Laburnum Adami* presented rather constantly 48 chromosomes, the $2x$ number, and showed no evidence of any fusion, reduction, or autoregulation. These plants gave no response to such chloralizing as that described for *Pisum sativum*, and after greater stimulation nuclear divisions were not resumed. The study of nuclear phenomena threw no light upon the problem of graft hybrids. There were no heterotypic mitoses and the author doubts whether heterotypic mitoses are to be found in vegetative or somatic tissues. Such mitoses as those described by English writers for malignant tumors STRASBURGER believes to be incorrectly interpreted.

The noted Mespilus at Bronvaux, recently studied by NOLL, is discussed, and here again there is no evidence of fusion or reduction. A study of the Bizzaria orange compared with "Agrumi," which is not a hybrid, showed no cytological differences; both have 16 chromosomes. The evidence showed that Bizzaria is a hybrid of sexual origin and that there is nothing to support any theory of autoregulation.

The paper gives a full account of the cytological details of graft hybrids, together with theoretical discussions which cannot be treated adequately in a brief review.—CHARLES J. CHAMBERLAIN.

Phototropism and perception of light.—FITTING has undertaken[12] to solve the question whether a localized tropic or nastic sensitiveness must be considered as a sign of localization of the *perceptive faculty* for the stimulus, and whether it

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[11] STRASBURGER, EDUARD, Ueber die Individualität der Chromosomen und die Pfropfhybriden-Frage. Jahrb. Wiss. Bot. 44:482–555. *pls. 5–7.* 1907.

[12] FITTING, H., Lichtperception und phototropische Empfindlichkeit. Jahrb. Wiss. Bot. 45:83–136. 1907.